Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PLANETARY PHENOMENA FOR NOVEMBER AND DECEMBER, 1908.

By Malcolm McNeill.

PHASES OF THE MOON, PACIFIC TIME.

First Quarter..Nov.	1,	6^h 16^m A.M.	Full Moon....Dec.	7,	1^h 44^m P.M.
Full Moon.... "	7,	11 58 P.M.	Last Quarter.. "	15,	1 12 P.M.
Last Quarter.. "	15,	3 41 P.M.	New Moon.... "	23,	3 50 A.M.
New Moon.... "	23,	1 53 P.M.	First Quarter.. "	29,	9 40 P.M.
First Quarter.. "	30,	1 44 P.M.			

There will be a lunar appulse on December 7th. The Moon will just miss passing through the Earth's shadow, the nearest approach being 12″, at a time when the Moon is rising in the eastern part of the United States.

There will be a central eclipse of the Sun on December 23d, but the path of central eclipse lies far to the south, almost in Antarctic regions. The eclipse will scarcely be seen at all north of the equator. It is noteworthy for the fact that at the beginning and end of central eclipse, which occur at sunrise and sunset respectively, the eclipse is annular, and for the regions in the middle of the track, where the eclipse occurs near noon, it is total. This is due to the increase in apparent size of the Moon as it rises higher in the sky, causing a diminution in its actual distance from the place of observation on the surface of the Earth. When the Moon is in the zenith it is nearer us by about one sixtieth than it is when on the horizon. The maximum duration of totality is only eleven seconds.

The Sun reaches the winter solstice and winter begins December 21st, 10^h P.M., Pacific time.

Mercury passes inferior conjunction and becomes a morning star on October 28th, and remains a morning star until December 23d, when it passes superior conjunction and becomes an evening star. It reaches its greatest west elongation, 19° 19′, on November 13th,—rather a small greatest elongation, as it occurs only a little more than a week after perihelion passage. It rises rather more than an hour and one half before sunrise at this time, and the interval remains greater than an hour until after December 1st. The planet therefore can be seen in the twilight on clear mornings in the latter half of November. It will be too near the Sun to be seen in December, except possibly the first few days of the month.

Venus rises about three and one half hours before sunrise on November 1st,—that is, at about 3^h A.M.,—but it passed greatest west elongation about the middle of September, and its distance from the Sun diminishes from 38° on November 1st to 31° on December 31st. On November 1st it was nearly 17° north of the Sun, and on December 31st it is only a little more than 2°. These two causes combined cause a rapid diminution of the time between the rising of the planet and of the Sun, so that at the end of December the interval is only a little more than two hours. It passes perihelion on the morning of November 12th, but this causes very little diminution in the apparent distance from the Sun, for the reason that the orbit of *Venus* is very nearly circular, and not like the orbits of *Mercury* and *Mars,* which are relatively very eccentric. *Venus* and *Mars* are in rather close conjunction on the afternoon of November 30th, the former passing 1° 17′ north of the latter.

Mars is now a morning star, rising about two hours before sunrise on November 1st, or at about $4^h\ 30^m$ A.M. On December 31st it rises about three and one half hours before the Sun, or a little before 4^h A.M. During the two months' period it moves about 38° eastward and 14° southward, through *Virgo* into *Libra,* and on November 12th it passes about 3° north of *Spica,* the brightest star in *Virgo.* Its actual distance from the Earth has begun to diminish rapidly, thirty-six million miles during the two months, and its brightness will in consequence increase noticeably; but it will not become a conspicuous object until the late spring of 1909.

Jupiter rises at about $1^h\ 30^m$ A.M. on November 1st, and at about 10^h P.M. on December 31st. It is in the constellation *Leo,* and moves about 5° eastward and southward at a gradually diminishing rate until December 30th, when it becomes stationary, and then begins to retrograde or move westward.

Saturn is in good position for observation, being above the horizon until 3h 30m A.M. on November 1st, and until nearly midnight on December 31st. It crosses the meridian at about 9h 30m P.M. on November 1st, and at about 5h 30m P.M. on December 31st. It is in the constellation *Pisces,* and up to December 7th moves about 1° westward. It then begins its direct motion, and by the end of the month has moved about one half degree eastward. The rings as seen in the telescope appear to diminish in minor axis until December; after that they appear to grow wider, and will broaden out until some time in the summer of 1909; then for a few months they will appear to narrow again, but the narrowing in 1909 will not be as great as in 1908. There will be, on the whole, a progressive broadening of the rings for seven or eight years.

Uranus is in the southwestern sky in the evening. On November 1st it does not set until nearly 9h P.M., but by the end of December it has nearly reached conjunction with the Sun and sets only about half an hour after sunset. It remains in the constellation *Sagittarius,* but moves about 3° eastward away from the "milk-dipper" and π *Sagittarii,* which have served to mark it during 1908.

Neptune rises shortly after 9h P.M. on November 1st, and shortly after 5h P.M. on December 31st, having nearly reached opposition with the Sun. It remains in the constellation *Gemini.*